LISTING OF CLAIMS

Please amend the specification as follows.

Please amend the paragraph on page 14, lines 20-30, as follows:

In cases where the relationship VP<VM is established, that is, the output current Io is smaller than the limited current I1, the output voltage of the operational amplifier 22 becomes 0 V, thus the transistor Q13 ~~being~~ is turned off. Hence the foregoing constant voltage control makes the output voltage Vo ~~is raised~~ rise upward to the target voltage. In contrast, when the relationship of VP>VM is realized, the output voltage of the operational amplifier rises, whereby the transistor Q13 turns ~~off~~ on and the transistors Q12 and Q11 turn off. The output current Io is therefore forced to decrease. Through control, the output current Io is limited up to the limited current I1, and an equilibrium state of VP=VM is established.

Please amend the paragraph from page 17, line 23, through page 18, line 6, as follows:

In this way, the power supply ~~circuits~~ circuit 11 according to the present embodiment is provided with the current limiter 19, which is able to ~~stepwise~~ generate a limited value of the output current Io in a stepwise fashion as the time elapses, in response to the ~~operation concerning~~ rising of the output voltage Vo ~~made to rise~~ (i.e., the voltage tracking control is started or the battery voltage VB is applied to the input terminal 12 under the voltage tracking control). Thus, ~~with~~ the output current Io is controlled so as to increase gradually as the time elapses. This increase of the output current Io in a controlled manner will cause the output voltage Vo to increase stepwise, with the result that an overshoot of the output voltage Vo can be reduced. Accordingly, the overshoot can be suppressed, while still reducing the capacitance of the capacitor C12 connected to the output terminal. Additionally, a chip type of capacitor can be used as the capacitor C12, whereby the power supply circuit 11 can be minimized in size and manufacturing cost of the circuit can be lessened.

LISTING OF CLAIMS

Please replace all previous versions, and listings, of claims in the present application with the following listing of claims.

1. (Currently Amended) A power supply circuit comprising:

an electric switching element placed in a power transmission path connecting an input terminal to which an input voltage is applied and an output terminal through which an output voltage is applied to a load connected to the output terminal;

a voltage detecting circuit detecting the output voltage supplied through the output terminal;

a reference-voltage producing circuit producing a reference voltage in accordance with a target voltage;

a voltage control circuit controlling the electric switching element so that the detected output voltage tracks the reference voltage;

a current detecting circuit detecting an output current supplied through the output terminal to the load;

a limited-current-value setting circuit setting a limited value to the output current, ~~wherein~~ the limited value ~~increases~~ increasing gradually over time during a rise of the output voltage up to the target voltage; and

a current limiting circuit controlling the electric switching element to keep the detected output current at a current value less than or equal to the limited value during the rise of the output voltage up to the target voltage, the current limiting control having priority over an output voltage tracking control.

2. (Currently Amended) ~~The~~ A power supply circuit ~~according to claim 1~~, comprising:

an electric switching element placed in a power transmission path connecting an input terminal to which an input voltage is applied and an output terminal through which an output voltage is applied to a load connected to the output terminal;

a voltage detecting circuit detecting the output voltage supplied through the output terminal;

a reference-voltage producing circuit producing a reference voltage in accordance with a target voltage;

a voltage control circuit controlling the switching element so that the detected output voltage tracks the reference voltage;

a current detecting circuit detecting an output current supplied through the output terminal to the load;

a limited-current-value setting circuit setting a limited value to the output current, the limited value increasing stepwise with a progress in time during a rise of the output voltage up to the target voltage; and

a current limiting circuit controlling the switching element to keep the detected output current at a current value less than or equal to the limited value during the rise of the output voltage up to the target voltage, the current limiting control having priority over the output voltage tracking control

~~wherein the limited-current-value setting circuit is configured to stepwise increase the limited value as time progresses~~.

3. (Previously Presented) The power supply circuit according to claim 2, wherein the limited-current-value setting circuit is configured to stepwise increase the limited value by a predetermined amount at given intervals of time.

4. (Previously Presented) The power supply circuit according to claim 2, wherein the limited-current-value setting circuit is provided with a timer circuit counting a predetermined period of time and a limited-value increasing circuit increasing the limited value by the predetermined amount each time the timer circuit finishes counting the predetermined period of time.

5. (Previously Presented) The power supply circuit according to claim 2, which is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the electric switching element being placed in the current supply path.

6. (Withdrawn) The power supply circuit according to claim 1, wherein the limited-current-value setting circuit is configured to continuously increase the limited value with an elapse in time during a rise of the output voltage.

7. (Withdrawn) The power supply circuit according to claim 6, wherein the power supply circuit is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the main transistor being placed in the current supply path.

8. (Currently Amended) The power supply circuit according to claim ~~1~~ 3, which is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the electric switching element being placed in the current supply path.

9. (Currently Amended) ~~The~~ A power supply circuit ~~according to claim 1~~, further comprising:

an electric switching element placed in a power transmission path connecting an input terminal to which an input voltage is applied and an output terminal through which an output voltage is applied to a load connected to the output terminal;

a voltage detecting circuit detecting the output voltage supplied through the output terminal;

a reference-voltage producing circuit producing a reference voltage in accordance with a target voltage;

a voltage control circuit controlling the switching element so that the detected output voltage tracks the reference voltage;

a current detecting circuit detecting an output current supplied through the output terminal to the load;

a limited-current-value setting circuit setting a limited value to the output current, wherein the limited value increases gradually with a progress in time during a rise of the output voltage up to the target voltage;

a current limiting circuit controlling the switching element to keep the detected output current at a current value less than or equal to the limited value during the rise of the output voltage up to the target voltage, the current limiting control having priority over the output voltage tracking control; and

a delay control circuit outputting a rise start signal after a delay time from an application of the input voltage to the input terminal,

wherein the limited-current-value setting circuit is configured to start setting the limited value in response to the outputted rise start signal.

10. (Previously Presented) The power supply circuit according to claim 9, wherein the delay time is set to a period of time during which a ringing component of the input voltage is reduced below a predetermined level.

11. (Previously Presented) The power supply circuit according to claim 10, wherein the delay control circuit is provided with a charge circuit operating with the input voltage applied and providing a charge voltage based on the input voltage and a comparison circuit drawing a comparison between the charge voltage and a given threshold and outputting the rise start signal when the charge voltage becomes equal to the given threshold.

12. (Withdrawn) The power supply circuit according to claim 10, wherein the delay control circuit is provided with an oscillation circuit outputting a reference clock signal and a timer circuit operating using the reference clock signal to output the rise start signal when the predetermined period of time elapses after the application of the input voltage to the input terminal.

13. (Previously Presented) The power supply circuit according to claim 10, further comprising a shutoff circuit configured to control the electric switching element in an off-state thereof until the rise start signal is outputted.

14. (Previously Presented) The power supply circuit according to claim 10, which is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the electric switching element being placed in the current supply path.

15. (Withdrawn) The power supply circuit according to claim 9, wherein the delay control circuit is provided with a comparison circuit drawing a comparison between the applied

input voltage and a given threshold so as to output a comparison signal and a constant-level detecting circuit outputting the rise start signal on condition that the comparison signal is kept at the same level for a given interval of time.

16. (Previously Presented) The power supply circuit according to claim 9, further comprising a shutoff circuit configured to control the electric switching element in an off-state thereof until the rise start signal is outputted.

17. (Previously Presented) The power supply circuit according to claim 9, which is formed into a series regulator having circuitry in which a current supply path serving as the power transmission path is placed to connect both of the input terminal and the output terminal, the electric switching element being placed in the current supply path.

18. (Currently Amended) The power supply circuit according to claim ~~9~~ 17, further comprising a shutoff circuit configured to control the electric switching element in an off-state thereof until the rise start signal is outputted.

19. (Cancelled)

20. (Currently Amended) The power supply circuit according to claim ~~1~~ 2, wherein the electric switching element is a transistor element.

21. (Currently Amended) The power supply circuit according to claim ~~1~~ 2, further comprising first and second smoothing circuits connected to the ~~first and second~~ input and output terminals, respectively, and configured to smoothen the input and output voltages, respectively,

wherein at least the voltage detecting circuit, the reference-voltage producing circuit, the voltage control circuit, the limited-current-value setting circuit, and the current limiting circuit are formed into an integrated circuit.

22. (Previously Presented) A power supply circuit comprising:

an electric switching element placed in a power transmission path connecting an input terminal to which an input voltage is applied and an output terminal through which an output voltage is applied to a load connected to the output terminal;

a voltage detecting circuit detecting the output voltage supplied through the output terminal;

a voltage control circuit controlling the electric switching element so that the detected output voltage tracks a reference voltage to be targeted;

a current detecting circuit detecting an output current supplied through the output terminal to the load;

a limited-current-value setting circuit setting a limited value to the output current when a predetermined delay time has passed from an application of the input voltage to the input terminal, wherein the limited value increases gradually with a progress in time during a rise of the output voltage up to the target voltage; and

a current limiting circuit controlling the switching element to keep the detected output current at a current value less than or equal to the limited value during the rise of the output voltage up to the target voltage, the current limiting control having priority over an output voltage tracking control.

23. (Currently Amended) ~~The~~ A power supply circuit ~~according to claim 22~~, further comprising:

an electric switching element placed in a power transmission path connecting an input terminal to which an input voltage is applied and an output terminal through which an output voltage is applied to a load connected to the output terminal;

a voltage detecting circuit detecting the output voltage supplied through the output terminal;

a voltage control circuit controlling the electric switching element so that the detected output voltage tracks a reference voltage to be targeted;

a current detecting circuit detecting an output current supplied through the output terminal to the load;

a limited-current-value setting circuit setting a limited value to the output current when a predetermined delay time has passed from an application of the input voltage to the input

terminal, wherein the limited value increases gradually with a progress in time during a rise of the output voltage up to the target voltage;

a current limiting circuit controlling the switching element to keep the detected output current at a current value less than or equal to the limited value during the rise of the output voltage up to the target voltage, the current limiting control having priority over an output voltage tracking control; and

a delay control circuit providing the limited-current-value setting circuit with the predetermined delay time.

24. (Currently Amended) The power supply circuit according to claim ~~23~~ 22, wherein the delay time is set to a period of time during which a ringing component of the input voltage is reduced below a predetermined level.

25. (Previously Presented) The power supply circuit according to claim 24, wherein the delay control circuit is provided with a charge circuit operating with the input voltage applied and providing a charge voltage based on the input voltage and a comparison circuit drawing a comparison between the charge voltage and a given threshold and outputting the rise start signal when the charge voltage becomes equal to the given threshold.

26. (Previously Presented) The power supply circuit according to claim 22, wherein the electric switching element is a transistor element.

27. (Currently Amended) ~~he~~ The power supply circuit according to claim 22, further comprising first and second smoothing circuits connected to the ~~first and second~~ input and output terminals, respectively, and configured to smoothen the input and output voltages, respectively.

28. (Previously Presented) The power supply circuit according to claim 22, wherein at least the voltage detecting circuit, the voltage control circuit, the limited-current-value setting circuit, and the current limiting circuit are formed into an integrated circuit.